

A BLANK HAVING AN ELASTICATED EDGE

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

 [0001] The present invention relates to a blank. More particularly, the present invention relates to a blank with a knitted section, an opening, and an elasticated edge being
10 disposed therebetween.

2. Description of the Related Art

 [0002] Seamless circular knit garments are generally made
15 from a tubular shaped blank. This blank forms articles of clothing such as an undershirt, a brassiere, or undergarment without any lateral seam. To assemble an article of clothing from the blank, such as a knit panty, one or more portions are removed from the blank. For example, leg hole areas and waist
20 hole areas are removed from the blank to define the knit panty.

 [0003] Typically, the leg hole areas need an elastic material or a banding around a circumference of the leg hole areas, a circumference of the waist hole area, or both to keep
25 the knit panty on the wearer, when worn. Generally, a first elastic member and a second elastic member are stitched around the circumference of each leg hole area. Although effective in producing the completed garment, it has been observed that these post circular knitting operations are not productive, are time
30 intensive, and are wasteful. They are detrimental because a

material must be manually fixed to the circular knit blank after the circular knitting process.

5 [0004] Accordingly, there is a need for a blank that eliminates one or more of the aforementioned drawbacks and deficiencies of the prior art.

SUMMARY OF THE INVENTION

10 [0005] It is an object of the present invention to provide a blank with a body having a knitted section, an opening, and an edge between the knitted section and the opening.

15 [0006] It is another object of the present invention to provide a blank with the knitted section made from a number of first yarns and the edge with a number of second yarns that are elastic yarns for providing a tension to a human body when worn.

20 [0007] It is another object of the present invention to provide such a blank with the first yarns terminating a predetermined distance away from the edge so that the edge is formed from a number of second elastic yarns providing a tension to a human body when worn.

25 [0008] It is still another object of the present invention to provide such a blank having an aperture with a circumference, with a portion of the circumference formed by a number of second elastic yarns, and the number of second elastic yarns providing a tension at the circumference, when worn.

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[0009] It is still further object of the present invention to provide a blank with a knitted section, an aperture, and an edge, with the edge between the aperture and the knitted section and with the edge formed from a number of second elastic yarns that overlap the number of first yarns and with the number of second yarns providing a tension to a body at the edge, when worn.

[0010] The above and other objects, advantages and benefits of the present invention will be understood by reference to the detailed description provided below and the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

[0011] Fig. 1 is a perspective view of a tubular shaped blank of the prior art having first and second elastic members;

[0012] Fig. 2 is a cross sectional view of the first elastic member along line 2-2 of Fig. 1 being stitched to an end of the knitted portion;

[0013] Fig. 3 is a side view of a shaped blank with an elasticated edge of the present invention;

[0014] Fig. 4 is a cross-sectional view of the elasticated edge along line 4-4 of Fig. 3;

[0015] Fig. 5 is a cross-sectional view of another embodiment of the elasticated edge along line 4-4 of Fig. 3;

[0016] Fig. 6 is a side view of a blank with an elasticated edge without any leg openings;

[0017] Fig. 7 is a cross-sectional view of the elasticated edge along line 7-7 of Fig. 6;

[0018] Fig. 8 is a cross-sectional view of another embodiment of the elasticated edge along line 7-7 of Fig. 6;

10 [0019] Fig. 9 is a cross-sectional view of yet another embodiment of the elasticated edge along line 7-7 of Fig. 6;

[0020] Fig. 10 is a cross-sectional view of still another embodiment of the elasticated edge along line 7-7 of Fig. 6; and
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[0021] Fig. 11 is a stitch diagram of the elasticated edge and the knitted portion of the blank of Fig. 6.

DETAILED DESCRIPTION OF THE INVENTION

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[0022] Referring to the drawings and, in particular, Fig. 1, there is provided a blank of the prior art generally represented by reference numeral 10. The blank 10 is preferably circularly knit by a conventional circular knitting machine, such as a Santoni S.p.A.[®] circular knitting machines. As is shown in Fig. 1., the blank 10 forms a lower body garment having a torso encircling portion and a waist-encircling portion. Alternatively, the blank 10 may form an upper body garment, a head encircling garment, a foot encircling garment, hosiery or
25 any other article produced by a circular knit machine known in the art.
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[0023] The blank 10 preferably has a bottom portion 16 with a first aperture 12 and a second aperture 14 therein. The first aperture 12 preferably forms a first leg hole and the second aperture 14 forms a second leg hole. In the prior art, in order to secure the blank on a wearer, a time-consuming operation was needed. For example, to secure the blank 10 on the wearer a member was manually connected to the blank 10 after circular knitting. A first and second elastic members 18, 20 were connected to a knitted portion 22 to provide tension to the blank 10 at the first and the second apertures 12, 14, respectively. Preferably, this tension was used to secure the blank 10, at both the first aperture 12 and the second aperture 14, on to the legs, waist, and crotch areas of the user when worn. This provided for improved fit of the blank 10 on the wearer and prevented the blank from falling off the wearer during usage, such as walking or running.

[0024] Referring to Fig. 2, there is shown a cross sectional view of the knitted portion 22 and the first aperture 12 along line 2-2 of Fig. 1. The knitted portion 22 is in a leftmost portion of Fig. 2, while the first aperture 12 is illustrated in dotted lines. As shown, the prior art first elastic member 18 is a first "U" shaped elastic material. Likewise, the second elastic member 20 shown in Fig. 1 is a second "U" shaped elastic material (not shown). The first "U" elastic member 18 surrounds an edge 24 of the knitted portion 22 the first aperture 12. The first elastic member 18 is connected to both an inner side 26 and an outer side 28 of the blank 10 at the edge 24.

[0025] The first elastic member 18 is connected to both the inner side 26 and the outer side 28 by a manual stitching operation 30 as shown after the circular knitting of the blank 10 is completed. Likewise, the second elastic member 20 is also connected to both the inner side 26 and the outer side 28 of the second aperture 14 by a similar second manual stitching operation (not shown).

[0026] Although effective in securing the blank 10 on the wearer, adding these first and second elastic members 18, 20, are costly and time intensive. The manual stitching slows the process of forming the knit garments, such as a panty, and is inconsistent with the benefits of circular knitting. The first and second elastic members 18, 20 needlessly increase material costs, and are labor intensive as they require stitching and time to connect the first and the second elastic members to the blank 10.

[0027] Referring to Fig. 3, the present invention permits the circular knitting machine to form a blank 32 with an elasticated edge 34 that obviates any manual stitching operation. The blank 32 is a tubular shaped garment and has a knitted portion 36. The knitted portion 36 has an inner portion 38 that preferably faces the wearer and an outer portion 40 that is opposite the inner portion. The blank 32 also has a first opening 42 and a second opening (not shown). The knitted portion 36 is formed from a number of first yarns. The first yarns are knit in a number of loops and may be any yarns known in the art including cotton, nylon, polyester, wool, silk, a flat ground yarn, a non-elastic yarn having portions of elastic yarns, or any combinations thereof.

[0028] As it is shown, the blank 32 forms a knit panty. In this embodiment, the blank 32 has the first opening 42 forming the first leg hole and the second opening (not shown) forming a second leg hole on an opposite side of the blank 32. However, one skilled in the art should appreciate that blank 32 may form any garment known in the art, including a brassiere, a pair of pants, a pair of trousers, a pair of shorts, a shirt, a slipper, a sock, a leg encircling garment, or any other article being known in the art. Likewise, the first opening 42 may form any feature of any of the above mentioned garments such as a leg hole, a neck hole, an arm hole, a foot receiving opening and any other features of the articles.

[0029] The blank 32 preferably is formed having a longitudinal axis 44 shown as a dotted line. The blank 32 is circular knit in a first knit direction 46 and a second knit direction 48. The first opening 42 in this embodiment is substantially "U" shaped, however the first opening 42 may be any shape known in the art and may be a slit, circular, an arch, an ellipse, polygonal, a rectangular shaped aperture or any shaped desired. The blank 32 may be circularly knit with the first opening 42, or the first opening may be formed by a manual cutting operation subsequent to a time that the blank is circularly knit.

[0030] The opening 42 has a border 50. The border 50 is located at an intersection between a last knitted stitch (not shown) of the knitted portion 36 and the opening 42. Preferably, the opening 42 is located in a desired location of the blank 34 and may be the arm hole, the neck hole, the leg

holes, the band or any other desired location known in the art. The border 50 is shown as arch shaped, and has a similar shape and size as the arch of the intersection of the first opening 42 and the knitted portion 36.

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[0031] One advantage of the present invention is that the elasticated edge 34 and the knitted portion 36 are both formed during the circular knitting process to increase productivity. The elasticated edge 34 formed during the circular knitting process is itself advantageous. The elasticated edge 34 obviates the necessity of the manual stitching operation after circular knitting, let alone to connect any first and second elastic members 18, 20 to the blank 32. Moreover, an amount of materials is reduced, as less material is needed, relative to the instance of the prior art where the first and second elastic members 18, 20 are connected to the blank 32 to complete the blank.

[0032] The elasticated edge 34 is preferably made from a number of second yarns preferably formed in a number of loops that are located on the border 50. The number of second yarns are preferably elastic yarns. The number of second yarns may be a spandex, Lycra[®], a bare elasthane, a nylon elasthane combination, a polyester elasthane combination, a cotton elasthane, or any combinations thereof. The number of second yarns may overlap yarns that forming the knitted portion 36 at the border 50. The second yarn may be knitted along a circumference or perimeter of the first opening 42. Overlapping is defined as the number of second yarns extending over and covering the knitted portion 36 at the border 50. In an embodiment, the number of second yarns may be integrally

connected to the inner portion 38 of the blank 32. In another embodiment, the number of second yarns may be integrally connected to the outer portion 40 of the blank 32, or both the inner portion 38 and the outer portion 40.

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[0033] Preferably, the number of second yarns forming the elasticated edge 34 extend outward an amount opposite the inner portion 38. Alternatively, the number of second yarns may extend outward an amount opposite the outer portion 40. Still
10 further, the number of second yarns extend outward from both the inner and the outer portion 38, 40 to impart the material properties of the number of second yarns to the blank 32 and to provide tension to the blank at the border 50. In this manner, the blank 32 is securely fit on the wearer, when worn.

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[0034] Referring to Fig. 4, there is shown a cross-sectional view of the elasticated edge 34 that has a first portion 52, a second portion 54, and an intermediate portion 56. The first portion 52, the second portion 54, and the
20 intermediate portion 56 are all formed from the number of second yarns to provide a tension to the knitted portion 36 at the border 50. In this manner, the first portion 52, the second portion 54, and the intermediate portion 56 collectively provide tension to the blank 32 to secure the blank 32 to the wearer,
25 when worn.

[0035] Referring to Fig. 5, there is shown a cross-sectional view of another embodiment of the elasticated edge 34. In this embodiment, both the first portion 52 and the second
30 portion 54 are formed from the number of second yarns to provide a tension to the knitted portion 36 at the border 50, while the

intermediate portion 56 is formed from the same material as the knitted portion 36.

[0036] Referring to Fig. 6, there is shown still another embodiment. In this embodiment, the blank 32 is tubular in shape and is not formed with any opening, let alone the first opening 42. The elasticated edge 34 is in a predetermined location of the blank 32 that corresponds to one or more leg holes, arm holes, neck holes, foot receiving opening or any other location where a desired amount of tension is needed, for example, to hold or tension the blank 32 in place on a wearer. In this embodiment, the blank 32 is formed by a circular knitting operation. Subsequent to the conclusion of the circular knitting operation, in this embodiment, the blank 32 is removed from the circular knitting machine (not shown). Thereafter, to complete the article a cutting operation, preferably a manual cutting operation is performed to produce an opening in a desired location of the blank 32.

[0037] Referring to Fig. 7, there is shown a cross-sectional view of another embodiment of the elasticated edge 34. The elasticated edge 34 has the second portion 54. In this embodiment, the elasticated edge 34 is formed from the number of second yarns overlapping only on the inner portion 38 of the knitted portion 36 of the blank 32. In this embodiment, a portion of the blank 32 of Fig. 6 is removed upon completion of the circular knitting to reveal a feature of the garment such as a leg hole.

[0038] Referring to Fig. 8, there is shown another embodiment of the blank 32 in which in this embodiment, the

first portion 52 is formed with the number of second yarns and the intermediate portion 56 is formed with the same material as the knitted portion 36. The first portion 52 overlaps the outer portion 40 of the blank 34.

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[0039] Referring to Fig. 9, there is another embodiment of the elasticated edge 34 of Fig. 6. The elasticated edge 34 has the first portion 52 and the second portion 54. The first portion 52 and the second portion 54 are both formed from the number of second yarns. The first portion 52 is on the inner portion 38 of the knitted portion 36 of the blank 32. The second portion 54 is on the outer portion 40 of the blank 32. In this embodiment, a portion of the blank 32 is removed upon completion of the circular knitting to form the opening 42.

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[0040] Referring to Fig. 10, there is shown another embodiment of the elasticated edge 34 of the blank 32 of Fig. 6. In this embodiment, the first portion 52, the second portion 54, and the intermediate portion 56 are all formed with the number of second yarns and disposed at the desired location on the blank 32.

[0041] Referring to Fig. 11, there is shown a stitch diagram of the stitch pattern of the elasticated edge 34 on the knitted portion 36 of the blank 32. The stitch pattern of the elasticated edge 34 on the knitted portion 36 has misstitches 60 and knit stitches 62. The first yarns that form the knitted portion 36 of the blank 32 are the non-elastic yarns and the second yarns that form the elasticated edge 34 are elastic yarns. In this embodiment, the elasticated edge 34 overlaps the

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knitted portion 36. The elasticated edge 34 preferably provides tension to preselected portion of the knitted portion 36.

[0042] It should be understood that the foregoing
5 description is only illustrative of the present invention.
Various alternatives and modifications can be devised by those
skilled in the art without departing from the invention.
Accordingly, the present invention is intended to embrace all
such alternatives, modifications and variances.

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